



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,760	03/05/2002	Jonathan Manuel Watts	100202161-1	6842

7590 06/24/2004
HEWLETT-PACKARD COMPANY
Intellectual Property Administration
P.O. Box 272400
Fort Collins, CO 80527-2400

EXAMINER

INOA, MIDYS

ART. UNIT	PAPER NUMBER
-----------	--------------

2188

DATE MAILED: 06/24/2004

5

Please find below and/or attached an Office communication concerning this application or proceeding.

2

Office Action Summary

Application No.

10/091,760

Applicant(s)

WATTS, JONATHAN MANUEL *SM*

Examiner

Midys Inoa

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6, 11-13, 16, 21-23, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Chan et al. (5,822,772).

Regarding Claims 1, 11, and 21, Chan discloses a method for re-ordering requests for shared resources, the method comprising:

receiving, by an arbiter (dispatch logic 121), requests for accessing the shared resources from one or more requestors (multiple requestors), wherein a plurality of requests may be received from each requester (Column 5, lines 38-40). **The dispatch logic received the requests from the unified command queue, which in turn receives the request from multiple requestors;**

arbitrating, by the arbiter (dispatch logic), between the plurality of requests in such a way so that the plurality of requests from each requestor may be re-ordered in non-FIFO order, although these request are ordered by being placed in multiple FIFO queues, **the request are being re-ordered in non-FIFO order since the order that they are placed into these queues does not reflect the order in which they were requested by the requestors or dispatched by dispatch logic 121. Instead these requests are re-ordered in an order reflective of which memory row in the DRAM 100 the command is accessing (Column 5, lines 49-61);**

selecting, by the arbiter (dispatch logic) a next request to access the shared resources based on the re-ordering of requests. **This selection procedure takes place when the dispatch logic places requests in the respective queues 1 through 4 and places them in an order that affects the order in which they are selected to be executed. The order in which the dispatch logic places the requests in the queue is equivalent to performing a selection of which request will be executed before the others** (Column 5, line 62-Column 6, line 6);

and

communicating an information from the arbiter (**dispatch logic 121**) to a memory controller (**selection logic 131**), where the memory controller accesses shared resources by **activating one of the queues and thus issuing the accessing commands within that queue and the selection information from the selection logic 131** permits the servicing of the next request selected by the arbiter **which are within the selected queue.**

Regarding Claims 2-3, 12-13, and 22-23, Chan discloses the method of claim 1, further comprising: associating a unique identifier tag with each request and using the identifier tag by the requestors to keep track of when the plurality of requests from each requestor are serviced (Column 2, lines 1-12).

Regarding Claims 6, 16, and 26, Chan discloses the method of claim 1, wherein the requests comprise memory requests, and wherein the shared resources comprise a shared memory system. **Since the requests can come from multiple requestors, making it a shared memory system, the request from many requestors are initially unified in one single unified queue 111** (Figure 4 and Columns 5, lines 38-40)

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 4, 14, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al. (5,822,772) in view of Hagersten et al. (5,950,226).

Chan et al. discloses the system of claims 3, 13, and 23 above. Chan does not teach transmitting the identification tag of an access command and a strobe signal to the requestor that sent the selected request. Hagersten et al. discloses initiating servicing a request by transmitting a signal back to a requestor to notify that a particular command has been completed. **In order to properly notify of completion and identify the command completed, the signal sent must include a command identifier tag and a completion strobe signal (Column 23, lines 25-39). Since the signal being sent to the requestor identifies a command completed, such tag included in the signal has to be related to such command.** It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the completion notice of Hagersten et al. with the system of Chan et al. since adding such capabilities allows the requestor when a request was successful.

5. Claims 5, 7-10, 15, 17-20, 25, and 27-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chan et al. (5,822,772) in view of Hagersten et al. (5,950,226) as applied to claims 4, 14, and 24 above, and further in view of Microsoft Computer Dictionary.

Regarding Claims 5, 15, and 25, Chan in view of Hagerstend discloses the system of claims 4, 14, and 24. They do not disclose a tag containing additional information related to the request. Microsoft dictionary discloses a tag containing information about a record, which in many cases may include address or storage location information (page 435). **This storage location information can be regarded as additional information that relates to data associated with the selected request.** It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the functionality described in the Microsoft Dictionary to the invention of Chan in view of Hagerstand since a tag of this kind allow for a local system to know where the request are coming from.

Regarding Claims 7, 17, and 27, Chan et al. discloses the method of claim 5, wherein the selected request comprises a memory write request. Since the art discloses the unification of access commands, the commands unified in queue 111 can in fact contain several write requests. Regarding Claim 8, 18, and 28, Microsoft Computer dictionary discloses a tag containing information about a record, which in many cases may include information such as address or storage location (page 435).

Regarding Claims 9, 19, and 29, Chan et al. teaches the unification of multiple access commands in a Unified Command Queue 111 in which some of the commands can be read requests (Figure 4).

Regarding Claims 10, 20, and 30, Microsoft Computer dictionary discloses a tag containing information about a record, which in many cases may include information such as address or storage location (page 435).

Response to Arguments

6. Applicant's arguments filed April 12th, 2004 have been fully considered but they are not persuasive.

Regarding Claims 1, 11, and 21, Applicant argues that the Prior art of record does not teach arbitrating and re-ordering requests in non-FIFO order. Although these request are ordered by being placed in multiple FIFO queues, **the request are being re-ordered in non-FIFO order since the order that they are placed into these queues does not reflect the order in which they were requested by the requestor or dispatched by dispatch logic 121. Instead these requests are re-ordered in an order reflective of which memory row in the DRAM 100 the command is accessing (Column 5, lines 49-61);**

Regarding Claim 4, 14, and 24, applicant argues that the Prior Art of Record does not teach the identifier tag being associated with the selected request. **In order to properly notify of completion and identify the command completed, the signal sent must include a command identifier tag and a completion strobe signal (Column 23, lines 25-39). Since the signal being sent to the requestor identifies a command completed, such tag included in the signal has to be related to such command.**

Regarding Claims 5, 7-10, 15, 17-20, 25, and 27-30, applicant argues that the combination of Chen, Hagersten and Microsoft dictionary would not be obvious since such a combination would require substantial reconstruction. It is clear that in combining teachings by “modifying” one invention to include a feature of the second invention, some redesign must be involved in the modification process. Examiner does not state that the modification of the

Art Unit: 2188

invention of Chen in view of Hagersten to include the limitation taught by Microsoft would be simple; however, such modification is physically possible and achievable.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Midys Inoa whose telephone number is (703) 305-7850. The examiner can normally be reached on M-F 7:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2188

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Midys Inoa

Midys Inoa

Examiner

Art Unit 2188

MI

Mano Padmanabhan
6/22/04

**MANO PADMANABHAN
SUPERVISORY PATENT EXAMINER**